



Appl. No. 10/020,313
Amendment dated November 1, 2006
Reply to Office Action dated September 18, 2006

H-1190

Amendments to the Claims:

This listing of claims will replace all prior versions and listing of claims in the application.

Listing of Claims:

1-34. (Canceled)

35. (Currently Amended) A storage system to be coupled to an IP network, said storage system comprising:

a physical input/output port to be coupled to the IP network;

a control unit coupled to the physical input/output port; and

a plurality of disk drives coupled to the control unit,

the physical input/output port being accessible by a block I/O request having a first port number via the IP network and a file I/O request having a second port number via the IP network,

wherein the plurality of disk drives are configured into a plurality of volumes, of which a first volume is assigned to store data related to the block I/O request and a second volume is assigned to store data related to the file I/O request,

when an I/O request received at the control unit via the physical input/output port is the block I/O request including the first port number, the control unit performs a first operation, corresponding to the first port number, for storing data in the first volume, and

when an I/O request received at the control unit via the physical input/output port is the file I/O request including the second port number, the control unit performs a second operation, corresponding to the second port number, for storing data in the second volume, and

~~wherein said block I/O request and said file I/O request are sent from different host computers.~~

36. (Previously Presented) A storage system according to claim 35, wherein the block I/O request has an IP packet that includes the first port number and first information including an address in the first volume.

37. (Previously Presented) A storage system according to claim 35, wherein the file I/O request has an IP packet that includes the second port number and second information including file data.

38. (Previously Presented) A storage system according to claim 35, wherein the block I/O request has a TCP packet in which the first port number is included.

39. (Previously Presented) A storage system according to claim 36, wherein the IP packet encapsulates a TCP packet in which the first port number is included.

40. (Previously Presented) A storage system according to claim 35,
wherein the first volume and the second volume are concurrently assigned.

41. (Previously Presented) A storage system according to claim 35,
wherein the control unit maps relationships between logical addresses of the
volumes and physical addresses of the disk drives to which data is to be stored.

42. (Currently Amended) A storage system coupled to an IP network, the
storage system comprising:
a physical port coupled to the IP network;
a control unit coupled to the physical port; and
a plurality of disk drives coupled to the control unit,
the physical port being accessible by a block I/O request having a first port
number and first information from a first processor via the IP network and a file I/O
request having a second port number and second information from a second
processor via the IP network,

wherein the plurality of disk drives are configured into a plurality of volumes, of
which a first volume is assigned to store data related to the block I/O request and a
second volume is assigned to store data related to the file I/O request, ~~and~~

when an I/O request including the first port number is received from the first
processor at the control unit via the physical port, the control unit performs a first

operation, corresponding to the first port number, for storing data in the first volume,
and

when an I/O request including the second port number is received from the second processor at the control unit via the physical port, the control unit performs a second operation, corresponding the second port number, for storing data in the second volume, ~~and~~

~~wherein said block I/O request and said file I/O request are sent from different host computers.~~

43. (Previously Presented) A storage system according to claim 42,
wherein the block I/O request has an IP packet that includes the first port number and the first information including an address in the first volume.

44. (Previously Presented) A storage system according to claim 42,
wherein the file I/O request has an IP packet that includes the second port number and the second information including file data.

45. (Previously Presented) A storage system according to claim 42,
wherein the block I/O request has a TCP packet in which the first port number is included.

46. (Previously Presented) A storage system according to claim 43,

wherein the IP packet encapsulates a TCP packet in which the first port number is included.

47. (Previously Presented) A storage system according to claim 42, wherein the first volume and the second volume are concurrently assigned.

48. (Previously Presented) A storage system according to claim 42, wherein the control unit maps relationships between logical addresses of volumes and physical location of the disk drives to which data is to be stored.

49-55. (Canceled)

56. (Currently Amended) A storage system to be coupled to an IP network, said storage system comprising:

- a physical port to be coupled to the IP network;
- a control unit coupled to the physical port; and
- a plurality of disk drives coupled to the control unit;

wherein the physical port is accessible by a first IP packet having a first port number via the IP network and a second IP packet having a second port number via the IP network,

wherein the plurality of disk drives are configured into a plurality of volumes, of which a first volume is assigned to store data related to the first IP packet and a second volume is assigned to store data related to the second IP packet,

when the first IP packet is received at the control unit via the physical port, the control unit performs a first operation, corresponding to the first port number, for storing block data in the first volume, and

when the second IP packet is received at the control unit via the physical port, the control unit performs a second operation, corresponding to the second port number, for storing file data in the second volume, and

~~wherein said block I/O request and said file I/O request are sent from different host computers.~~

57. (Previously Presented) A storage system according to claim 56, wherein the first IP packet has a TCP packet in which the first port number is included.

58. (Previously Presented) A storage system according to claim 56, wherein the second IP packet has a TCP packet in which the second port number is included.

59. (Previously Presented) A storage system according to claim 56,

wherein the control unit transforms the file data into block data for storing in the second volume.

60. (Previously Presented) A storage system according to claim 35, wherein a format of file I/O related to the file I/O request is on the basis of NFS protocol, and the second operation is performed on the basis of the NFS protocol.

61. (Previously Presented) A storage system according to claim 35, wherein a format of the block I/O request is on the basis of SCSI protocol, and the first operation is performed on the basis of the SCSI protocol.

62. (Previously Presented) A storage system according to claim 42, wherein a format of the file I/O request is on the basis of NFS protocol, and the second operation is performed on the basis of the NFS protocol.

63. (Previously Presented) A storage system according to claim 42, wherein a format of the block I/O request is on the basis of SCSI protocol, and the first operation is performed on the basis of the SCSI protocol.

64. (Previously Presented) A storage system according to claim 56,

wherein a format of the file data is on the basis of NFS protocol, and the second operation is performed on the basis of the NFS protocol.

65. (Previously Presented) A storage system according to claim 56, wherein a format of the block data is on the basis of SCSI protocol, and the first operation is performed on the basis of the SCSI protocol.

66. (Currently Amended) A storage system to be coupled to an IP network, said storage system comprising:
a physical input/output port to be coupled to the IP network;
a control unit coupled to the physical input/output port; and
a plurality of disk drives coupled to the control unit,
the physical input/output port being accessible by a block I/O request having a first port number via the IP network and a file I/O request having a second port number via the IP network,

wherein the plurality of disk drives are configured into a plurality of volumes, of which a first volume is assigned to store data related to the block I/O request and a second volume is assigned to store data related to the file I/O request,

when an I/O request received at the control unit via the physical input/output port is the block I/O request including the first port number, the control unit performs a first operation, corresponding to the first port number, for storing data in the first volume,

when an I/O request received at the control unit via the physical input/output port is the file I/O request including the second port number, the control unit performs a second operation, corresponding to the second port number, for storing data in the second volume, and

wherein said block I/O request is based upon a SCSI standard.

67. (Previously Presented) A storage system according to claim 66,
wherein the block I/O request has an IP packet that includes the first port number and first information including an address in the first volume.

68. (Previously Presented) A storage system according to claim 66,
wherein the file I/O request has an IP packet that includes the second port number and second information including file data.

69. (Previously Presented) A storage system according to claim 66,
wherein the block I/O request has a TCP packet in which the first port number is included.

70. (Previously Presented) A storage system according to claim 67,
wherein the IP packet encapsulates a TCP packet in which the first port number is included.

71. (Previously Presented) A storage system according to claim 66,
wherein the first volume and the second volume are concurrently assigned.

72. (Previously Presented) A storage system according to claim 66,
wherein the control unit maps relationships between logical addresses of the
volumes and physical addresses of the disk drives to which data is to be stored.

73. (Currently Amended) A storage system coupled to an IP network, the
storage system comprising:

a physical port coupled to the IP network;

a control unit coupled to the physical port; and

a plurality of disk drives coupled to the control unit,

the physical port being accessible by a block I/O request having a first port
number and first information from a first processor via the IP network and a file I/O
request having a second port number and second information from a second
processor via the IP network,

wherein the plurality of disk drives are configured into a plurality of volumes, of
which a first volume is assigned to store data related to the block I/O request and a
second volume is assigned to store data related to the file I/O request, and

when an I/O request including the first port number is received from the first
processor at the control unit via the physical port, the control unit performs a first
operation, corresponding to the first port number, for storing data in the first volume,

when an I/O request including the second port number is received from the second processor at the control unit via the physical port, the control unit performs a second operation, corresponding the second port number, for storing data in the second volume, and

wherein said I/O request including the first port number is based upon a SCSI standard.

74. (Previously Presented) A storage system according to claim 73, wherein the block I/O request has an IP packet that includes the first port number and the first information including an address in the first volume.

75. (Previously Presented) A storage system according to claim 73, wherein the file I/O request has an IP packet that includes the second port number and the second information including file data.

76. (Previously Presented) A storage system according to claim 73, wherein the block I/O request has a TCP packet in which the first port number is included.

77. (Previously Presented) A storage system according to claim 74, wherein the IP packet encapsulates a TCP packet in which the first port number is included.

78. (Previously Presented) A storage system according to claim 73,
wherein the first volume and the second volume are concurrently assigned.

79. (Previously Presented) A storage system according to claim 73,
wherein the control unit maps relationships between logical addresses of
volumes and physical location of the disk drives to which data is to be stored.

80. (Currently Amended) A storage system to be coupled to an IP network,
said storage system comprising:

a physical port to be coupled to the IP network;

a control unit coupled to the physical port; and

a plurality of disk drives coupled to the control unit;

wherein the physical port is accessible by a first IP packet having a first port
number via the IP network and a second IP packet having a second port number via
the IP network,

wherein the plurality of disk drives are configured into a plurality of volumes, of
which a first volume is assigned to store data related to the first IP packet and a
second volume is assigned to store data related to the second IP packet,

when the first IP packet is received at the control unit via the physical port, the
control unit performs a first operation, corresponding to the first port number, for
storing block data in the first volume,

when the second IP packet is received at the control unit via the physical port, the control unit performs a second operation, corresponding to the second port number, for storing file data in the second volume, and

wherein said ~~I/O request~~ first IP packet is based upon a SCSI standard.

81. (Previously Presented) A storage system according to claim 80, wherein the first IP packet has a TCP packet in which the first port number is included.

82. (Previously Presented) A storage system according to claim 80, wherein the second IP packet has a TCP packet in which the second port number is included.

83. (Previously Presented) A storage system according to claim 80, wherein the control unit transforms the file data into block data for storing in the second volume.

84. (Previously Presented) A storage system according to claim 66, wherein a format of file I/O related to the file I/O request is on the basis of NFS protocol, and the second operation is performed on the basis of the NFS protocol.

85. (Previously Presented) A storage system according to claim 66,
wherein a format of the block I/O request is on the basis of SCSI protocol, and
the first operation is performed on the basis of the SCSI protocol.

86. (Previously Presented) A storage system according to claim 73,
wherein a format of the file I/O request is on the basis of NFS protocol, and
the second operation is performed on the basis of the NFS protocol.

87. (Previously Presented) A storage system according to claim 73,
wherein a format of the block I/O request is on the basis of SCSI protocol, and
the first operation is performed on the basis of the SCSI protocol.

88. (Previously Presented) A storage system according to claim 80,
wherein a format of the file data is on the basis of NFS protocol, and the
second operation is performed on the basis of the NFS protocol.

89. (Previously Presented) A storage system according to claim 80,
wherein a format of the block data is on the basis of SCSI protocol, and the
first operation is performed on the basis of the SCSI protocol.